OIPE IAP10 JUN 19 2006 PATENT & TRADEMARK OFFICE

OIPE IAP69 JUN 19 2006 PATENT & TRADEMARK OFFICE

A

```
OsMAPK5a -------MDGAPVAEFRPTMTHGGRYLLYDIFGNKFEVTN
OsMAPK5b -------MDGAPVAEFRPTMTHGGRYLLYDIFGNKFEVTN
TaWCK-1  -------MDGAPVAEFRPTMTHGGRFLLYNIFGNQFEITA
NtWIPK   MADANMGAGGGQFPDFPSVLTHGGQYVQFDIFGNFFEITT
Consensus        MDGAPVAEFRPTMTHGGR LLY IFGN FE T

                         I                      II
OsMAPK5a KYQPPIMPIGRGAYGIVCSVMNFETREMVAIKKIANAFNN
OsMAPK5b KYQPPIMPIGRGAYGIVCSVMNFETREMVAIKKIAN----
TaWCK-1  KYQPPIMPIGRGAYGIVCSVMNFETREMVASKKIANAFDN
NtWIPK   KYRPPIMPIGRGAYGIVCSVLNTELNEMVAVKKIANAFDI
Consensus KYQPPIMPIGRGAYGIVCSVMNFETREMVAIKKIANAF N

                    III                  IV
OsMAPK5a DMDAKRTLREIKLLRHLDHENIIGIRDVIPPPIPQAFNDV
OsMAPK5b ----------------------------------------
TaWCK-1  NMDAKRTLREIKLLRHLDHENIVGLRDVIPPAIPQSFNDV
NtWIPK   YMDAKRTLREIKLLRHLDHENVIGLRDVIPPPLRREFSDV
Consensus  MDAKRTLREIKLLRHLDHENIIGLRDVIPP IP  FNDV

                V
OsMAPK5a YIATELMDTDLHHIIRSNQELSEEHCQYFLYQILRGLKYI
OsMAPK5b ----------------------------------------
TaWCK-1  YIATELMDTDLHHIIRSNQELSEEHCQYFLYQLLRGLKYI
NtWIPK   YIATELMDTDLHQIIRSNQGLSEDHCQYFMYQLLRGLKYI
Consensus YIATELMDTDLHHIIRSNQELSEEHCQYFLYQLLRGLKYI

                    VI                      VII
OsMAPK5a HSANVIHRDLKPSNLLLNANCDLKICDFGLARPSSESDMM
OsMAPK5b ------------------CDLKICDFGLARPSSESDMM
TaWCK-1  HSANVIHRDLKPSNLLLNANCDLKICDFGLARPSSESDMM
NtWIPK   HSANVLHRDLKPSNLLVNANCDLKICDFGLARPNIENENM
Consensus HSANVIHRDLKPSNLLLNANCDLKICDFGLARPSSESDMM

                 * *
                    VIII                  IX
OsMAPK5a TEYVVTRWYRAPELLLNSTDYSAAIDVWSVGCIFMELINR
OsMAPK5b TEYVVTRWYRAPELLLNSTDYSAAIDVWSVGCIFMELINR
TaWCK-1  TEYVVTRWYRAPELLLNSTDYSAAIDVWSVGCIFMELINR
NtWIPK   TEYVVTRWYRAPELLLNSSDYTAAIDVWSVGCIFMELMNR
Consensus TEYVVTRWYRAPELLLNSTDYSAAIDVWSVGCIFMELINR

                          X
OsMAPK5a QPLFPGRDHMHQMRLITEVIGTPTDDELGFIRNEDARKYM
OsMAPK5b QPLFPGRDHMHQMRLITEVIGTPTDDELGFIRNEDARKYM
TaWCK-1  APLFPGRDHMHQMRLITEVIGTPTDDDLGFIRNEDARRYM
NtWIPK   KPLFGGKDHVHQIRLLTELLGTPTEADLGFLQNEDAKRYI
Consensus  PLFPGRDHMHQMRLITEVIGTPTDD LGFIRNEDARKYM

                                              XI
OsMAPK5a RHLPQYPRRTFASMFPRVQPAALDLIERMLTFNPLQRITV
OsMAPK5b RHLPQYPRRTFASMFPRVQPAALDLIERMLTFNPLQRITV
TaWCK-1  RHLPQFPRRSFPGQFPKVQPAALDLIERMLTFNPLQRITV
NtWIPK   RQLPQHPRQQLAEVFPHVNPLAIDLVDKMLTFDPTRRITV
Consensus RHLPQ PRRTFAS FP VQPAALDLIERMLTFNPLQRITV

OsMAPK5a EEALDHPYLERLHDIADEPICLEPFSFDFEQKALNEDQMK
OsMAPK5b EEALDHPYLERLHDIADEPICLEPFSFDFEQKALNEDQMK
TaWCK-1  EEALEHPYLERLHDVADEPICTDPFSFDFEQHPLTEDQMK
NtWIPK   EEALDHPYLAKLHDAGDEPICPVPFSFDFEQQGIGEEQIK
Consensus EEALDHPYLERLHD ADEPIC  PFSFDFEQ  L EDQMK

OsMAPK5a QLIFNEAIEMNPNIRY
OsMAPK5b QLIFNEAIEMNPNIRY
TaWCK-1  QLIFNEALELNPNFRY
NtWIPK   DMIYQEALSLNPEYA-
Consensus QLIFNEA E NPN RY
```

B

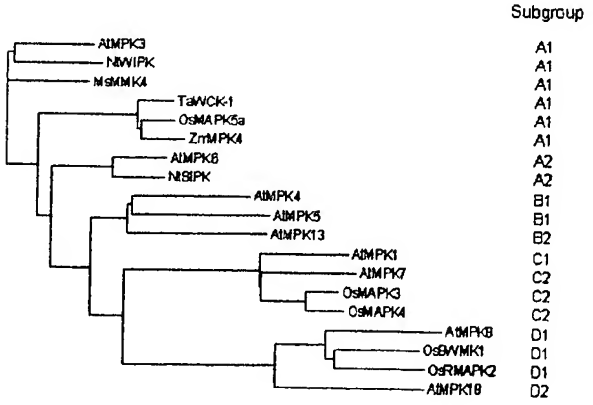

FIGURE 1

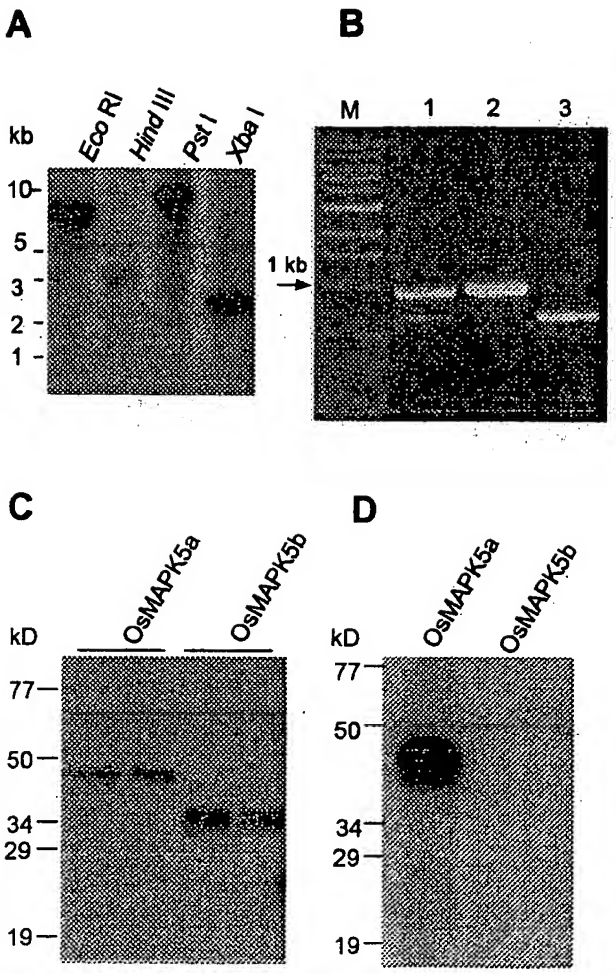

FIGURE 2

BEST AVAILABLE COPY

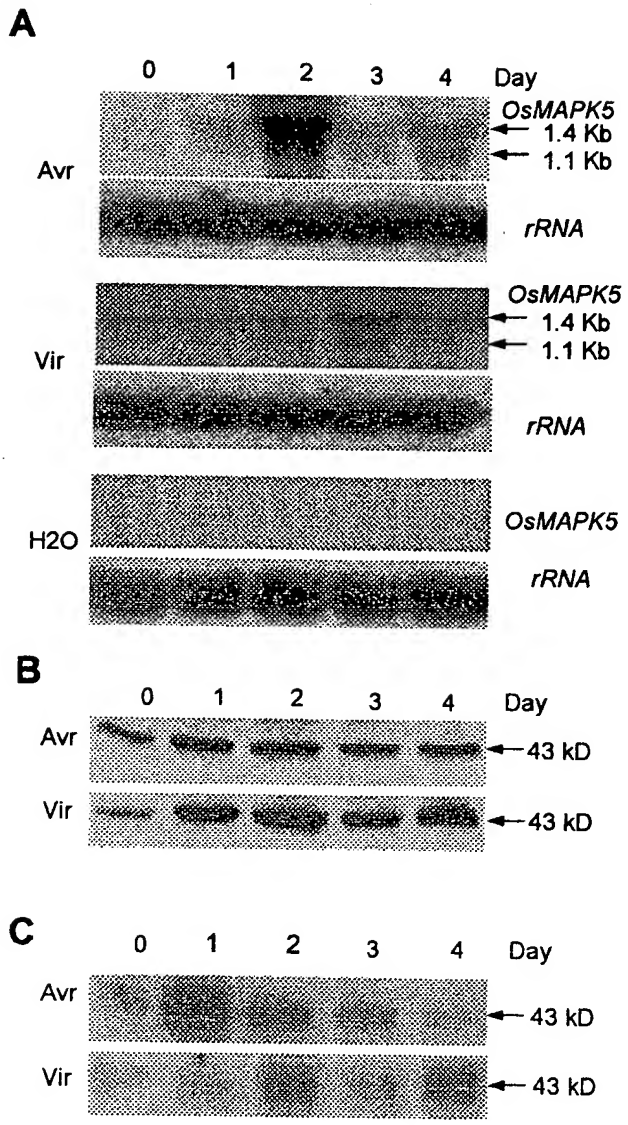

FIGURE 3

BEST AVAILABLE COPY

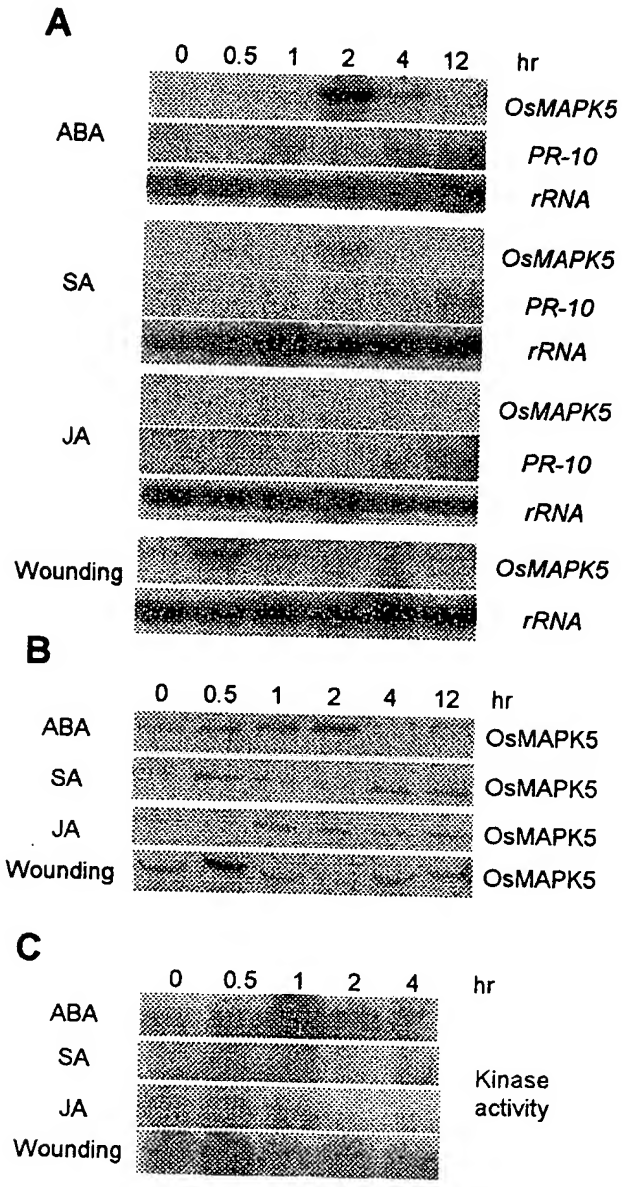

FIGURE 4

BEST AVAILABLE COPY

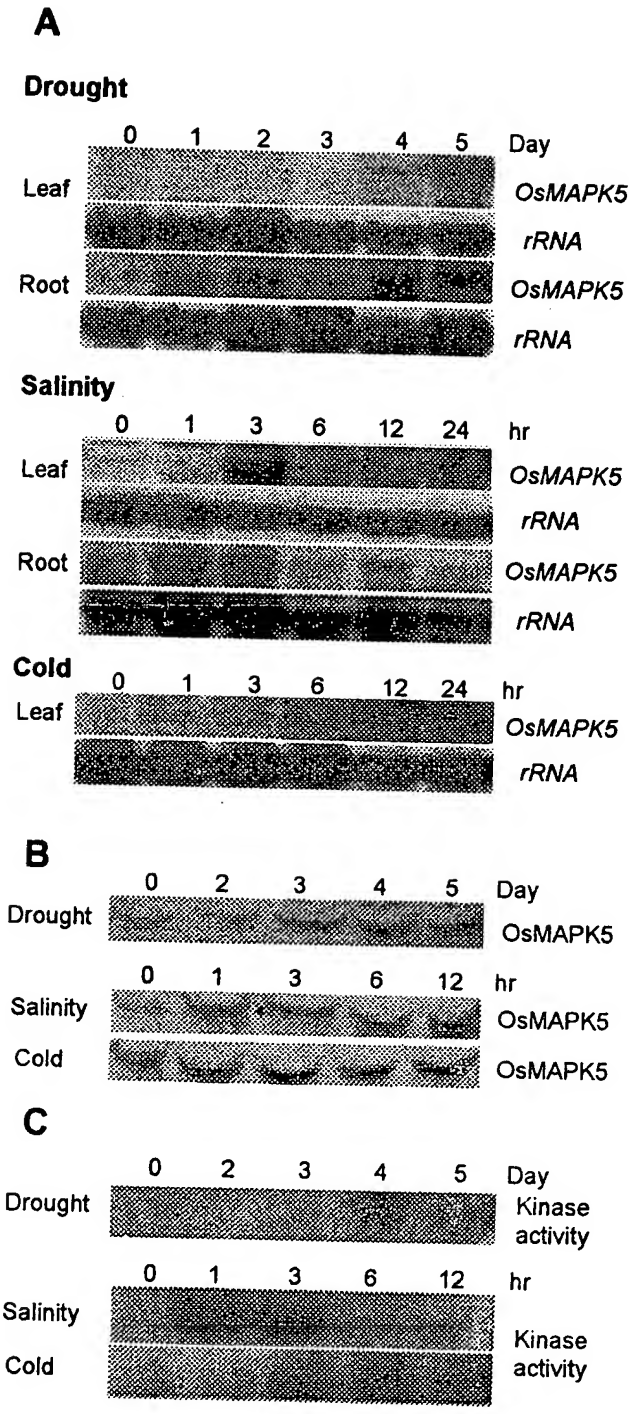

FIGURE 5

BEST AVAILABLE COPY

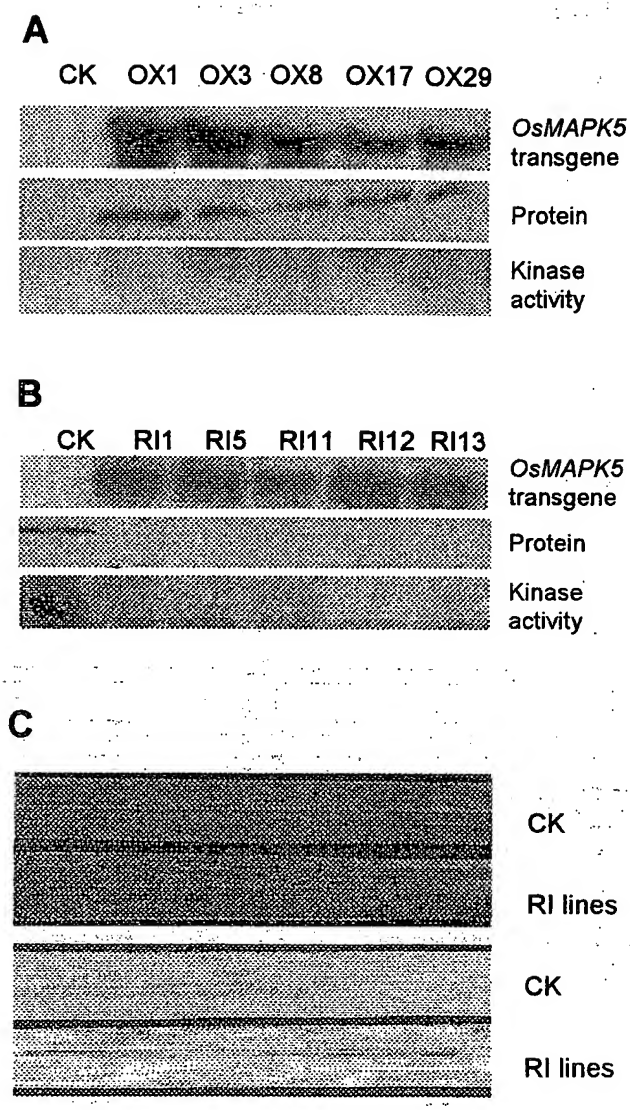

FIGURE 6

BEST AVAILABLE COPY

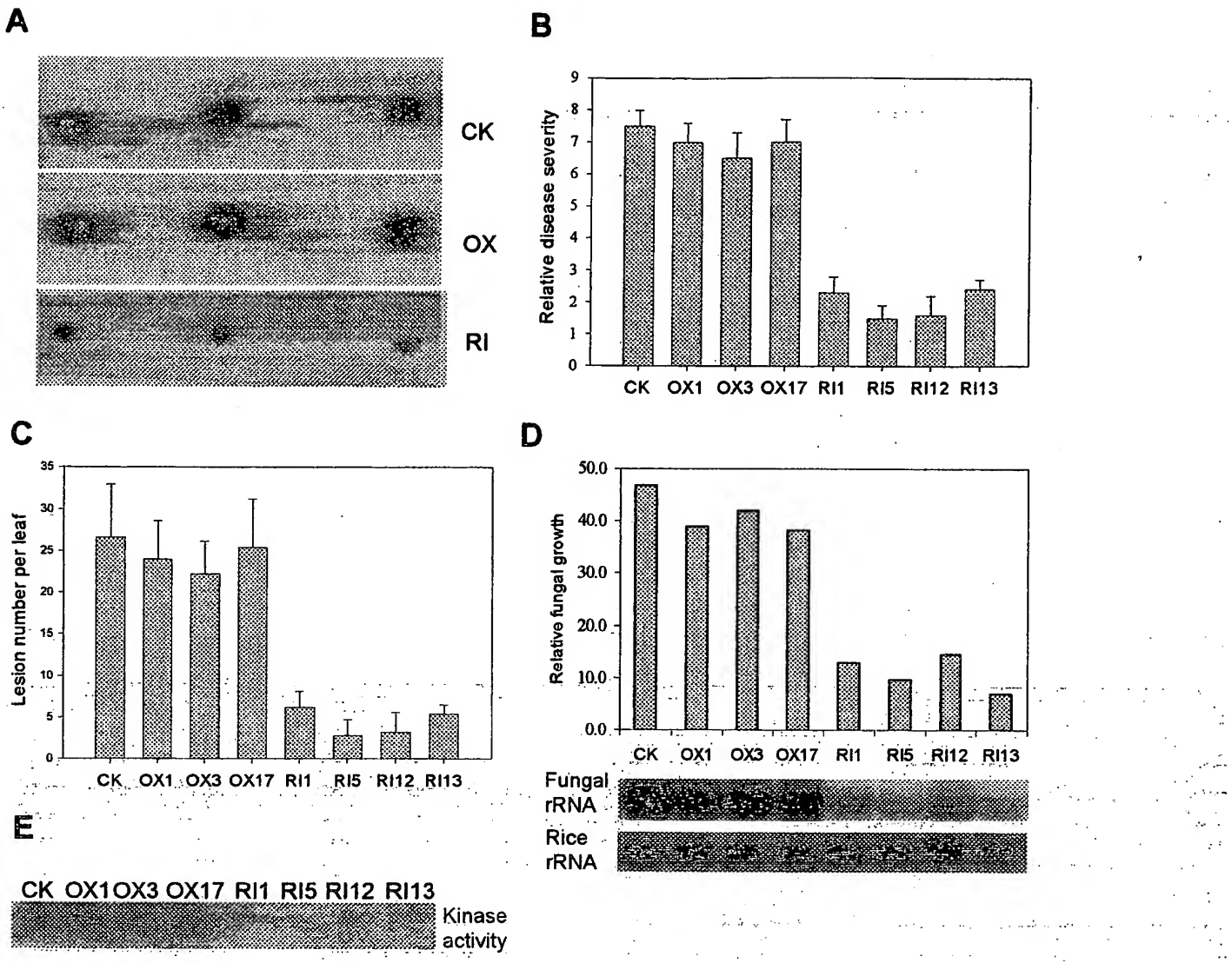

FIGURE 7

BEST AVAILABLE COPY

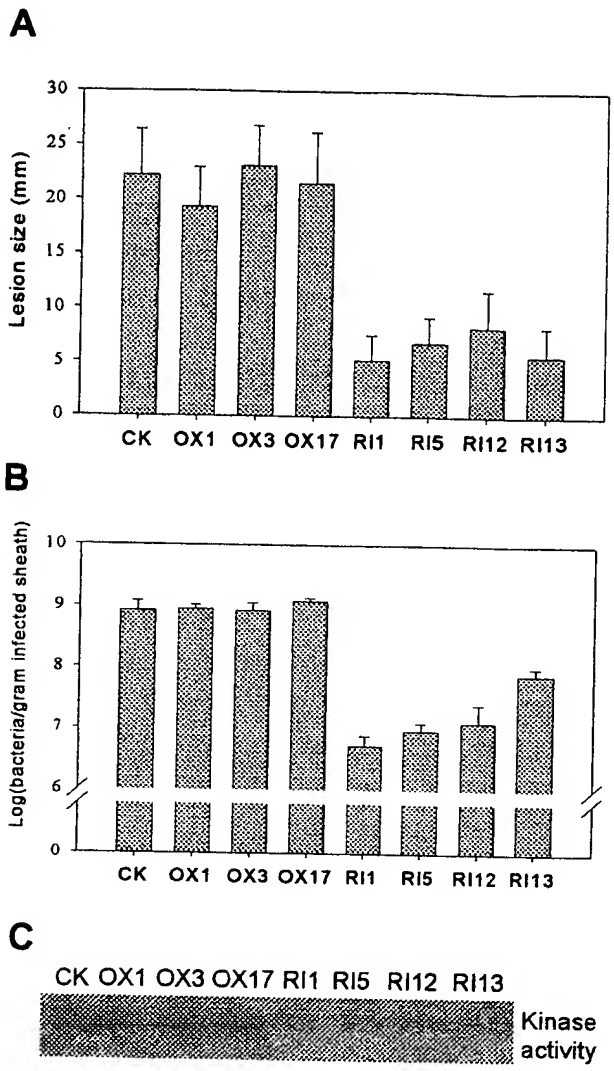

FIGURE 8

BEST AVAILABLE COPY

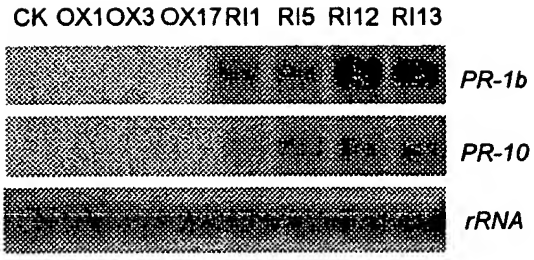

FIGURE 9

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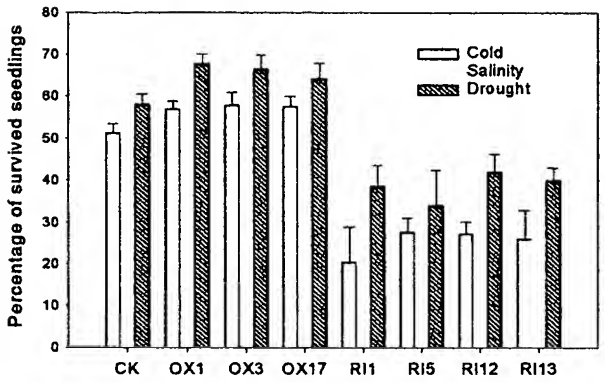
A



B

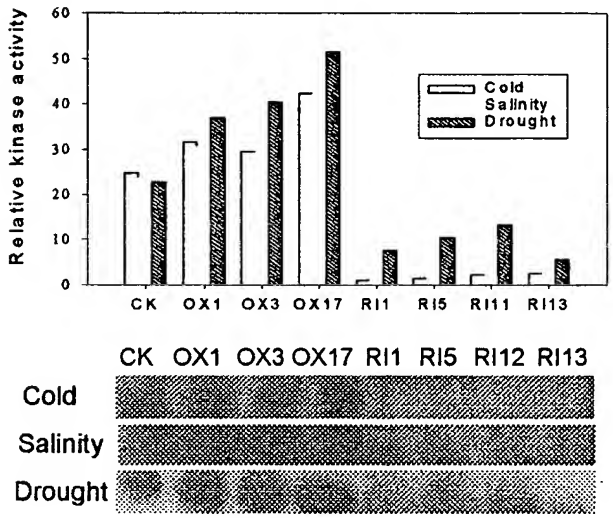


FIGURE 10

BEST AVAILABLE COPY

OsMAPK5a
SEQ. ID. NO: 1

```
1     agagagtcag ataaggtcgt taattaggtt ggtcaattcg gctgcttgcg gcgagagaag
61    aggaggaggg attagggatg gacggggcgc cggtggcgga gttcaggccg acgatgacgc
121   acggcggccg gtacctgctc tacgacatct tcgggaacaa gttcgaggtg acgaacaagt
181   accagccgcc catcatgccc attggccgcg gcgcctacgg gatcgtctgc tccgtgatga
241   actttgagac gagggagatg gtggcgataa agaagatcgc caacgcgttc aacaacgaca
301   tggacgccaa gcgcacgctc cgggagatca agctcctcag gcacctcgac cacgagaaca
361   tcataggcat cagggatgtg atcccgccgc cgatccctca ggcgttcaac gacgtctaca
421   tcgccacgga gctcatggac accgacctcc atcacatcat ccgctccaac caagaactgt
481   cagaagagca ctgccagtat ttcctgtacc agatcctgcg ggggctcaag tacatccact
541   cggcgaacgt gatccaccgc gacctgaagc cgagcaacct gctgctgaac gccaactgcg
601   acctcaagat ctgcgacttc gggctggcgc ggccgtcgtc ggagagcgac atgatgacgg
661   agtacgtggt cacccggtgg taccgcgcgc cggagctgct gctcaactcc accgactact
721   ccgccgccat cgacgtctgg tccgtcggct gcatcttcat ggagctcatc aaccgccagc
781   cgctcttccc cggcagggac cacatgcacc agatgcgcct catcaccgag gtgatcggga
841   cgccgacgga cgacgagctg gggttcatac ggaacgagga cgcgaggaag tacatgaggc
901   acctgccgca gtacccgcgc cggacgttcg cgagcatgtt cccgcgggtg cagcccgccg
961   cgctcgacct catcgagagg atgctcacct tcaacccgct gcagagaatc acagttgagg
1021  aggcgctcga tcatccttac ctagagagat tgcacgacat cgccgatgag cccatctgcc
1081  tggagccctt ctccttcgac ttcgagcaga aggctctaaa cgaggaccaa atgaagcagc
1141  tgatcttcaa cgaagcgatc gagatgaacc caaacatccg gtactagatt gaatcaccat
1201  ggaaatgaga tcccgtctat acctgctttg tacatatgat caagattgag agccgggtag
1261  actgaacatt gcatttgttt gtttgttgat gttcgaaacc cacattctct gcaagttgtg
1321  gctgctttgt atgatatatg gtactatgtt cgaataaaag ggtttggaac tttggattaa
1381  aaaaaaaaaa aaaaaa
```

FIGURE 11

BEST AVAILABLE COPY

OsMAPK5a
SEQ. ID. NO: 2

MDGAPVAEFRPTMTHGGRYLLYDIFGNKFEVTNKYQPPIMPIGR

GAYGIVCSVMNFETREMVAIKKIANAFNNDMDAKRTLREIKLLRHLDHENIIGIRDVI

PPPIPQAFNDVYIATELMDTDLHHIIRSNQELSEEHCQYFLYQILRGLKYIHSANVIH

RDLKPSNLLLNANCDLKICDFGLARPSSESDMMTEYVVTRWYRAPELLLNSTDYSAAI

DVWSVGCIFMELINRQPLFPGRDHMHQMRLITEVIGTPTDDELGFIRNEDARKYMRHL

PQYPRRTFASMFPRVQPAALDLIERMLTFNPLQRITVEEALDHPYLERLHDIADEPIC

LEPFSFDFEQKALNEDQMKQLIFNEAIEMNPNIRY

FIGURE 12

OsMAPK5b
SEQ. ID. NO: 3

```
1     agagagtcag ataaggtcgt taattaggtt ggtcaattcg gctgcttgcg gcgagagaag
61    aggaggaggg attagggatg gacggggcgc cggtggcgga gttcaggccg acgatgacgc
121   acggcggccg gtacctgctc tacgacatct tcgggaacaa gttcgaggtg acgaacaagt
181   accagccgcc catcatgccc attggccgcg gcgcctacgg gatcgtctgc tccgtgatga
241   actttgagac gagggagatg gtggcgataa agaagatcgc caactgcgac ctcaagatct
301   gcgacttcgg gctggcgcgg ccgtcgtcgg agagcgacat gatgacggag tacgtggtca
361   cccggtggta ccgcgcgccg gagctgctgc tcaactccac cgactactcc gccgccatcg
421   acgtctggtc cgtcggctgc atcttcatgg agctcatcaa ccgccagccg ctcttccccg
481   gcagggacca catgcaccag atgcgcctca tcaccgaggt gatcgggacg ccgacggacg
541   acgagctggg gttcatacgg aacgaggacg cgaggaagta catgaggcac ctgccgcagt
601   acccgcgccg gacgttcgcg agcatgttcc cgcgggtgca gcccgccgcg ctcgacctca
661   tcgagaggat gctcaccttc aacccgctgc agagaatcac agttgaggag gcgctcgatc
721   atccttacct agagagattg cacgacatcg ccgatgagcc catctgcctg gagcccttct
781   ccttcgactt cgagcagaag gctctaaacg aggaccaaat gaagcagctg atcttcaacg
841   aagcgatcga gatgaaccca aacatccggt actagattga atcaccatgg aaatgagatc
901   ccgtctatac ctgctttgta catatgatca agattgagag ccgggtagac tgaacattgc
961   atttgtttgt ttgttgatgt tcgaaaccca cattctctgc aagttgtggc tgctttgtat
1021  gatatatggt actatgttcg aataaaaggg tttggaactt tggattaaaa aaaaaaaaaa
1081  aaaa
```

FIGURE 13

OsMAPK5b

SEQ. ID. NO: 4

MMDGAPVAEFRPTMTHGGRYLLYDIFGNKFEVTNKYQPPIMPIGR

GAYGIVCSVMNFETREMVAIKKIANCDLKICDFGLARPSSESDMMTEYVVTRWYRAPE

LLLNSTDYSAAIDVWSVGCIFMELINRQPLFPGRDHMHQMRLITEVIGTPTDDELGFI

RNEDARKYMRHLPQYPRRTFASMFPRVQPAALDLIERMLTFNPLQRITVEEALDHPYL

ERLHDIADEPICLEPFSFDFEQKALNEDQMKQLIFNEAIEMNPNIRY

FIGURE 14